



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,469	01/07/2002	Ram S. Narang	D/96176D1D	6090

7590 08/23/2004

Patent Documentation Center  
Xerox Corporation  
Xerox Square 20th Floor  
100 Clinton Ave. S.  
Rochester, NY 14644

EXAMINER
----------

HAMILTON, CYNTHIA

ART UNIT	PAPER NUMBER
----------	--------------

1752

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/036,469

**Applicant(s)**

NARANG ET AL.

**Examiner**

Cynthia Hamilton

**Art Unit**

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-13, 16-27, 30, 31, 33, 38-41, 44, 45 and 47-71 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 16, 33, 45, 57-62, 64-66 and 69 is/are rejected.  
7) ☒ Claim(s) 44, 63, 67, 68, 70 and 71 is/are objected to.  
8) ☒ Claim(s) 10-13, 17-27, 30-31, 38-41, 47-56 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. The examiner notes the petition filed by applicants on October 6, 2003 has been granted as of August 9, 2004. The examiner checked the status of continuity now of record in this application. It was found to be as follows:

SERIAL NUMBER 10/036,469	FILING DATE 01/07/2002  RULE
APPLICANTS  Ram S. Narang, Fairport, NY;  Timothy J. Fuller, Pittsford, NY;  ** CONTINUING DATA ***** This application is a DIV of 09/268,794 03/16/1999 PAT 6,365,323 which is a DIV of 08/705,372 08/29/1996 PAT 5,945,253	

This is a copy of part of the

bibliographic sheet generated for the electronic record in this action. This matches the amendment made to the specification by applicants on October 6, 2003. Thus, the issue of domestic priority has been resolved. The earliest possible effective filing date for this application is now August 29, 1996. Yokoshima et al and Tsubaki et al remain prior art applied under 35 USC 102 (b) in consideration of this effective filing date.

2. Applicant's amendments to the claims to exclude the epoxy resins of Yokishima et al remove rejections with respect to claims 16, 44, 57-59, 61-62 and 64-65 under 35 U.S.C. 103(a) as being unpatentable over Yokoshima et al (EP 0 663 411 A1).

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1752

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

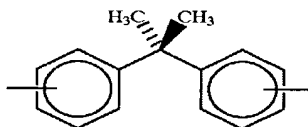
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

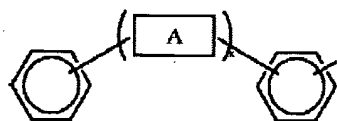
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16, 45, 57-61, and 64-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsubaki et al (4,448,948). Example 8 of Tsubaki et al anticipates the composition of instant claims 16, 45, 57-61, 64-66 and 69 if the chain extended polymer of claim 16 is the product of (i) the product of the instant formula that has been further reacted at the ends to form epoxy groups and the end groups are instant B groups reacted with (ii) an amine curing agent. The cured varnish of Example 8 in Tsubaki et al is made from the epoxy resin of Example 1 cured with diaminodiphenyl sulfone as the hardener of Tsubaki et al disclosed in col. 1, lines 9-18 which reads on the broadest reasonable definition of the instant amine curing agent set forth earlier in this action. Instant B in Example 1 of Tsubaki et al is derived from 2,2-bis(4-

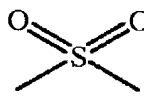
hydroxyphenyl)propane which gives B as



and instant



with  $x=1$  and A being



derived from dichlorodiphenyl

sulfone. With respect to claim 45, the structure made in Example 1 and shown in col. 5, clearly

Art Unit: 1752

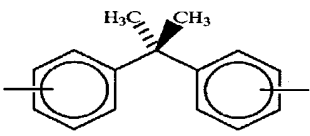
have B as end groups of the polymer. The number average molecular weight of the resin of Tsubaki et al is about 2,200. The limit in claims 57 to 60 is expressed as weight average molecular weight. Number average molecular weights are either equal to weight average molecular weight or the weight average molecular weight is larger by definition. See Kaufman page 175 wherein monodisperse polymers have Number average molecular weights equal to weight average molecular weight, i.e. weight average molecular weight/ Number average molecular weights = 1.000. It is inherent in the definitions of these two weights that this is always so. The more variant the sizes of the polymer chains in the polymer resin the higher the larger weight average molecular weight will be. Thus, the number average molecular weight given in Tsubaki et al in Example 1 is always lower or equal to the weight average molecular weight of the instant claims. See Kaufmann on pages 162-164 and 175-176 for support of this well-known relationship of these two kinds of molecular weight measurement. Thus, Tsubaki et al anticipate claims 57-60 as well. In Example 1, instant n is 4 and thus clearly the cured material anticipates the invention of instant claim 61. The degree of substitution of the epoxy groups in Example 1 of Tsubaki et al is 0.5. Epoxy groups are disclosed as photosensitivity groups in the instant specification. Thus, the compositions of claims 64-65 are anticipated by Tsubaki et al. Using 2 equivalents of epoxy groups/2,200 as molecular weight, then the resin of Tsubaki et al has 0.91 milliequivalents of epoxy groups /gram of precursor polymer if the precursor is the unchain extended polymer. Thus, with respect to instant claim 66, Tsubaki et al anticipates the instant composition with respect to epoxy groups before chain extension.

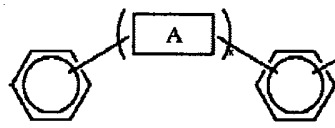
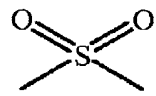
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1752

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubaki et al (4,448,948). Example 8 of Tsubaki et al anticipates the composition of instant claims 16, 45, 57-61, 64-66 and 69 if the chain extended polymer of claim 16 is the product of (i) the product of the instant formula that has been further reacted at the end repeat unit to form epoxy groups and the end groups are instant B groups reacted with (ii) an amine curing agent. The cured varnish of Example 8 in Tsubaki et al is made from the epoxy resin of Example 1 cured with diaminodiphenyl sulfone as the hardener of Tsubaki et al disclosed in col. 1, lines 9-18 which is reads on the broadest reasonable definition of the instant amine curing agent set forth earlier in this action. Instant B in Example 1 of Tsubaki et al is derived from 2,2-bis (4-

hydroxyphenyl)propane which gives B as  and instant

 with x=1 and A being  derived from dichlorodiphenyl

sulfone. . In Example 1, instant n is 4. In claim 62, the limit for n is "an integer from about 5 to about 70". The use of "about" here means the integer is not exactly from 5 to 70. Thus, the nearest about integer to 5 is 4. Therefore, the Example 8 of Tsubaki et al makes obvious the composition of claim 62 wherein 4 is held to be "about 5" because "an integer from about 5 to about 70" encompasses 4 if considered in its broadest reasonable sense. See particularly Ex

Art Unit: 1752

parte Eastwood, 163 USPQ 316 (Bd. App. 1968) and W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983) "about" was held to allow flexibility around that defined.

5. Claims 16, 33, 45, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsubaki et al (4,448,948). Example 5 of Tsubaki et al teach forming an epoxy resin like that of the abstract wherein 4,4'-dihydroxydiphenylmethane and 4,4'-difluorodiphenylketone are used to make the resin which is end capped with epoxy groups. This would make instant A as in claim 33 and B as in the third structure for B in instant claim 33 and in claim 69. This resin is not cured in the working examples of Tsubaki et al but the thrust of Tsubaki et al is set forth in col. 1, lines 9-17, wherein it is disclosed epoxy resins are hardened by amine among others. With respect to instant claims 16, 33, 45, and 69, the use of the epoxy resin with an amine hardener, i.e. the instant amine curing agent, to obtain a chain extended polymer would have been prima facie obvious in view of Tsubaki et al disclosing his objective in col. 1 to obtain an epoxy resin that would act better with respect to heat resistance, chemical resistance, water absorbability, mechanical properties and electrical properties than the curable resin cited in second paragraph that was cured optionally with amines.

4. Applicant's arguments filed October 6, 2003 have been fully considered but they are not persuasive. Applicants arguments with respect to Tsubaki et al are as follows starting on page 66 of their remarks:

Art Unit: 1752

Applicants disagree with this position. Tsubaki et al. teaches a polymer having terminal epoxy groups. See, e.g., column 4, lines 15 to 24 and column 5, lines 20 to 25 as well as the molecular structures at column 1, line 35, column 5, line 50, column 6, line 32, and column 10, line 1. Nothing in this reference, however, teaches or suggests a polymer having epoxy groups on the repeat units thereof. In contrast, the present invention is directed to a composition which comprises a crosslinked or chain extended polymer having been formed from a precursor polymer having epoxy groups contained on at least some of the monomer repeat units thereof, said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units of the precursor polymer and amine groups on an amine curing agent. Since Tsubaki et al. fails to teach or suggest a polymer having epoxy groups in at least some of the monomer repeat units thereof, Applicants are of the position that this reference does not anticipate and does not render obvious the present invention, and

accordingly respectfully request reconsideration and withdrawal of this ground for rejection.

The examiner agrees with applicant's statement that Tsubaki et al teach a polymer having terminal epoxy groups. However, the examiner does not see how "at least some of the monomer repeat units" does not read on some repeat units being the two end groups. The examiner turns to Webster's Third New International Dictionary of the English Language Unabridged at page 2171 for the definitions of "Some". As seen by <sup>2</sup>some, "some" can refer to one and that it is "one indeterminate quantity, portion, or number as distinguished from the rest". The examiner is tasked in examination to use the "broadest reasonable interpretation consistent with the specification" of the claim language. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). See particularly MPEP 2111. The examiner is also tasked during examination with respect to the claims to interpret as broadly as their terms reasonably allow. In re American



Art Unit: 1752

Academy of Science Tech Center, 2004 WL 1067528 (Fed. Cir. May 13, 2004). The words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004).

Chain extension, i.e. extending the chain in some manner, via the epoxy groups can occur by end chain reaction and crosslinking with groups mid chain. See Lee et al at page 222, "Curing Reactions" and page 226, "Crosslinking by Chain Extension". Thus, the examiner does not see how "said crosslinking or chain extension having occurred through linking groups formed by a reaction between the epoxy groups contained on at least some of the monomer repeat units" from claim 16 excludes the chain extended composition of Tsubaki et al. The rejection stands.

5. By amendment, applicants have addressed all issues of clarity and written support set forth by the examiner in the last Office Action.

6. Claim 17 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 13, 2003.

7. Claims 10-13, 18-27, 30-31, 38-41 and 47-56 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 13, 2003.

8. This application contains claims 10-13, 17-27, 30-31, 38-41 and 47-56 drawn to an invention nonelected with traverse in Paper No. 5. A complete reply to the final rejection must

Art Unit: 1752

include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

9. Claims 44, 63, 67, 68, 70 and 71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

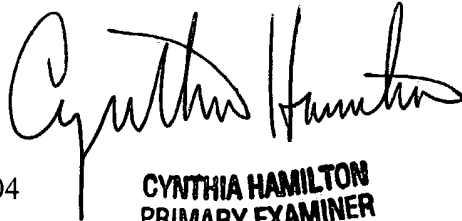
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. *Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331. The examiner can normally be reached on Monday through Friday 9:30 am to 5:00 pm.*

*If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.*

Art Unit: 1752

*Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).*



**CYNTHIA HAMILTON  
PRIMARY EXAMINER**

Cynthia Hamilton  
Primary Examiner  
Art Unit 1752

August 19, 2004